ISSN: 3079-3319

Falcons Journal of Advanced Research

Volume: 04, Issue: (02), Article ID: FJAR-VOL4-02-26001A

From Awareness to Action: Environmental Literacy and Pedagogical Depth in Punjab's Secondary Level English Textbooks

Sohail Falak Sher[1], *Muhammad Hammad Javed*[2(*)]

Abstract

This study examines how environmental literacy is represented and pedagogically developed in the Grade IX and Grade X English textbooks prescribed at the secondary level in Punjab, Pakistan. Using qualitative content analysis supported by descriptive quantitative analysis, the study coded 25 environmentally relevant textual, visual, and pedagogical units across the two textbooks. The analytical framework integrated four dimensions of environmental literacy—knowledge, attitudes and values, skills, and environmentally responsible action—with human–environment representation and four levels of pedagogical depth. Environmental knowledge appeared in 80.0% of the coding units, attitudes and values in 76.0%, skills in 56.0%, and action in 40.0%. Grade X showed broader environmental knowledge and stronger critical engagement than Grade IX, while action-oriented learning remained comparatively limited and was usually simulated, written, or planned rather than implemented. The textbooks frequently represented nature through aesthetic, health, risk, and resource-oriented frames, with an overall anthropocentric tendency and limited ecocentric treatment. Intercoder reliability was perfect across all reported categories (Cohen's κ = 1.00; observed agreement = 100%). The findings indicate a meaningful but fragmented foundation for environmental literacy. Greater curricular progression, climate and biodiversity content, environmental data literacy, critical inquiry, and authentic school- or community-based action are recommended.

Keywords: *environmental literacy, English language teaching, textbook analysis, sustainability education, ecolinguistics, Punjab, Pakistan*

Received: ***July 02, 2026*** *Accepted:* ***August 27, 2026***

How to Cite this Paper: Sher, S. F., & Javed, M. H. (2026). From awareness to action: Environmental literacy and pedagogical depth in Punjab's secondary level English textbooks. *Falcons Journal of Advanced Research, 4*(2), 1-25. https://doi.org/10.63287/741558

[1] Assistant Professor, Department of English Literature, The Islamia University of Bahawalpur, Pakistan, sfsher888@gmail.com

[2] Department of English Linguistics, The Islamia University of Bahawalpur, Pakistan, mr.hafizhamad@gmail.com (*Corresponding Author)

© 2026 The Author(s). Published by Falcons Journal of Advanced Research (FJAR).
This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY 4.0)

1. INTRODUCTION

Environmental problems such as climate change, air and water pollution, deforestation, biodiversity loss, waste accumulation, and the unsustainable use of natural resources have increased the need for education that prepares learners to understand environmental challenges and respond to them responsibly. The United Nations' Sustainable Development Goal 4.7 calls for learners to acquire the knowledge and skills required to support sustainable development, sustainable lifestyles, and responsible citizenship (United Nations, 2015). Education for Sustainable Development similarly aims to equip learners with the knowledge, skills, values, attitudes, and agency needed to make informed decisions and act responsibly toward the environment and society (UNESCO, 2020, 2026).

Environmental literacy is an important part of this educational agenda. It involves not only awareness of environmental issues, but also understanding of ecological and social systems, interest in environmental issues, competence to examine environmental issues and competence to make decisions and to act responsibly about the environment (Hollweg et al., 2011). The Environmentally literate learner must then be able to see the problems, pollution, climate change, as well as to analyse the causes of the problem, to weigh the alternatives and to see and understand the responsibilities of humans and make their choices. Environmental literacy framework used in North America by the Association for Environmental Education highlights the four aspects of environmental learning: environmental knowledge, dispositions, competencies, and environmentally responsible behaviour, as interconnected parts of the learning process (Hollweg et al., 2011).

Environmental Education has been a part of science, geography, and social studies, but environmental learning can also be taught while teaching English language. Through English lessons, students have chances to read about environmental issues to discuss their causes/effects, compare perspectives, write arguments and propose solutions, and communicate environmental messages. In this manner, the teaching of the English language can be instrumental in cultivating not only English language proficiency but also the environment knowledge, awareness, reflection and responsibility. This has led to a growing interest in incorporating environmental sustainability into ELT curricula, classroom and learning materials (Lee & Nguyen, 2024; Triyono et al., 2023).

Textbooks play a crucial role in this process for they make choices on what themes, texts, images, values and learning activities students will engage in when they encounter English. Textbooks are not just sources of grammar, vocabulary and reading, but they also convey specific views of society, development, nature and human responsibility. Environmental passages, stories, poems, illustrations and exercises can thus impact a learner's perception of ecological issues or people's interactions with the environment. The language and pictorial representations that are employed in educational material may have either a pro-ecological or anthropocentric effect (Stibbe, 2015) where nature is only considered good insofar as it is useful to the human being.

However, topics such as environmental issues do not automatically lead to the development of environmental literacy in textbooks. The textbook can reference tree planting, pollution, or wildlife or climate change, and students will only be expected to remember facts, define terms or answer closed comprehension questions. These can be activities that only give environmental information and do not foster the development of investigation, critical understanding, decision making, or responsible action. It is therefore necessary to measure the extent of environmental literacy not only in terms of the frequency and number of environmental themes present but also in terms of the level of representation of the theme and the pedagogical tasks involved. Hollweg et al. (2011) argue that environmental literacy encompasses knowledge of environmental systems and the skills and competencies to address them; UNESCO (2020) emphasises how sustainability education needs to link with informed decision making and actions.

The voice of environmental concerns is not insignificant, either. Books used in textbooks can depict nature as a place to enjoy, a resource, a place to be protected, or a shared environment in which people live. They might give just enough attention to industrial practices, institutional responsibility, economic systems and public policy, and to environmental damage as the result of individual carelessness, while minimizing the responsibility of institutions. Likewise, solutions can be broken down to individual practices that students need to adopt, such as planting trees and picking up trash, or they

can help students consider broader issues, competing forces, shared responsibility and sustainable alternatives. It is important to ask then what environmental topics are to be covered, how the relation between human and nature are represented, who are held responsible and how the learners are urged to act upon awareness when analyzing environmental literacy.

It is crucial that such capacities are developed during secondary education, as learners at this stage are expected to deal with more complex issues in relation to the social and environmental context. They can go beyond mere facts about the environment to an explanation of relationships, a comparison of perspectives, an evaluation of options, and the suggestion of solutions. Secondary-level English textbooks can support this development through reading passages, images, discussions, writing tasks, debates, projects, and problem-solving activities connected to locally and globally relevant environmental concerns. In Punjab, issues such as smog, water scarcity, waste disposal, deforestation, extreme weather, and declining biodiversity make environmental literacy particularly relevant to school education.

Recent studies have begun to examine ecological content and discourse in English language textbooks. Awal et al. (2025), for example, investigated environmental content in a Bangladeshi secondary-level English textbook and found value in examining how ecological concerns are integrated into language materials. Research in Pakistan has also explored how textbook discourse constructs perceptions of nature and environmental responsibility (Khan, 2025). A recent analysis of Punjab Curriculum and Textbook Board English textbooks examined linguistic and visual environmental patterns through ecolinguistics and social semiotics (Yasmin et al., 2026). However, this emerging research leaves room for an analysis centred specifically on environmental literacy as an educational construct, including environmental knowledge, attitudes and values, analytical skills, responsible behaviour, and the cognitive and action-oriented demands of textbook tasks.

The Pakistani ELT context also raises a broader question of curriculum–textbook alignment. Javed and Karim (2024) found that evaluating secondary English textbooks against curriculum objectives is necessary because prescribed materials do not automatically translate curricular intentions into equivalent learning opportunities. At the implementation level, Karim and Harwood (2026) similarly distinguish between intended and enacted pedagogy in Pakistani ELT curriculum innovation. These concerns are directly relevant to environmental literacy: even where sustainability-related intentions exist at policy or curriculum level, their educational value depends on how clearly, they are represented in textbooks and subsequently enacted through classroom tasks.

The present study therefore examines environmental literacy in secondary-level English textbooks prescribed in Punjab. It examines the environmental themes of the textbooks, how nature and human–environment relations are depicted in the textbooks, and the nature of pedagogical activities associated with the environmental content in the textbooks. Further, it factors in whether the textbooks predominantly carry environmental message(s) or offer learning opportunities for developing awareness and critical understanding, problem-solving skills and responsible action. This study aims to find out the strengths and weaknesses of the existing textbooks based on the textbook and learning tasks, and the implications of the research results for curriculum planners, textbook makers, teachers and the education policy makers.

2. LITERATURE REVIEW

2.1 Environmental Literacy as an Educational Concept

Environmental literacy is derived from the general concept of environmental education, which aims to empower learners to be familiar with the environmental systems, analyze environmental issues and engage in environmentally responsible decision making. Does not require possession of factual knowledge about nature. Instead, it integrates environmental knowledge and skills, attitudes, dispositions and responsible actions. Environmental literacy is a multi-dimensional concept that contains environmental knowledge, environmental attitudes, skills for environmental problem solving and environmentally responsible actions, as expressed by Hollweg et al. (2011). Their framework makes it a good starting point to consider whether educational materials just pass on information or do they help build the ability to interpret problems, to evaluate options, and to take action with information.

The idea has a close linkage with the concept of Education for Sustainable Development. UNESCO (2020) highlights the importance of sustainability education to empower learners with knowledge, skills, values and

agency to solve interlinked challenges in environmental, social and economic sustainability issues. It thus takes a step beyond awareness towards the informed judgment and the transformative action. In the context of school education, environmental literacy can be regarded as a continuum from knowing about environmental issues to knowing the cause and consequence and showing concern and responsibility, to problem-solving skills and then involvement in sustainable practices.

As McBride et al. (2013) point out, there is some overlapping of different terms—environmental literacy, ecological literacy, and ecoliteracy—as they have sometimes been used interchangeably, but they are rooted in distinct intellectual traditions. While the focus on the term environmental literacy is on knowledge, skills, attitudes, and actions, ecological literacy is more likely to highlight the understanding of ecological systems and the human reliance on these unities. Environmental literacy has been selected as the more appropriate concept for the present study, which enables the analysis of the contents of textbooks from the perspective of dimensions of education, specifically their knowledge, values, skills and action. It also provides a structure for assessing both what environmental information textbooks contain and what learners are expected to do with that information.

2.2 Environmental Literacy and Education for Sustainable Development

Education for Sustainable Development has strengthened the position of environmental learning across school subjects. Sustainable development cannot be addressed only through science or geography because environmental problems are also social, cultural, political, ethical, and linguistic. UNESCO's ESD framework therefore encourages the integration of sustainability across curricula and teaching practices rather than restricting it to a separate subject. This interdisciplinary position is important for English language education because language classrooms provide opportunities to explore environmental issues through reading, discussion, argumentation, reflection, and writing.

The success of such cross-curricular integration also depends on teacher preparedness. Khan and Karim (2024), examining ESL teachers' perceptions of in-service training for the Single National Curriculum in Pakistan, underline the importance of professional support when teachers are expected to implement curricular change. This has implications for environmental integration in English as action-oriented and inquiry-based environmental tasks may demand pedagogical scaffolding, which goes beyond conventional language tasks.

Within ESD, environmental literacy is a combination of cognitive and action-oriented learning. While knowledge of pollution, climate change, biodiversity or resource depletion is needed, knowledge by itself doesn't always result in responsible behavior. The learner should also have opportunities to explore values, reflect on alternative perspectives, make decisions, and link learning with real life action. This differentiation is particularly relevant to the assessment of textbooks. A textbook can include environmental content but fails to foster environmental literacy if activities are confined to reading and vocabulary practice, factual knowledge and understanding, or simply one-off and isolated moral statements. Fuller treatment should engage the students in enquiries into causes, judgements of responsibility, considerations of solutions and communications or action appropriate to those solutions.

This view is consistent with the adoption of the multiple analytical dimensions in the current study. Environmental knowledge refers to the facts, concepts, processes, causes and consequences referred to in the content of the textbooks. Environmental attitudes and values are issues that determine whether texts promote an awareness of, and respect for, the environment, conservation, responsibility and sustainable lifestyles. Environmental skills are defined as comparing, investigating, interpreting, problem solving and decision making. Environmental action is about whether learners are urged to take action that engages their learning, such as a project, campaign, advocacy, conservation or other types of engagement.

2.3 The Role of ELT in Environmental Education

The discussion on integrating environmental issues and concerns into English language teaching has been on for some time. Jacobs and Goatly (2000) proposed that ELT coursebooks have the potential to make a contribution to EE as social and global themes are regularly used in language learning. They noticed, however, that environmental topics discussed in coursebooks can be either superficial or they can be presented as to not challenge prevailing patterns of consumption and development. Their research proved to be significant in providing a connection between language teaching

materials and their connection with environmental responsibility, with the selection of topics, language and language teaching activities determining students' understanding of environmental issues.

The Nkwetisama (2011) also posited that the EFL and ESL education should be approached with an eco-didactic attitude. From this viewpoint, English teaching cannot be separated from the social and the environment in which English is being used. Environmental themes can be a source for the meaningful content of developing reading, writing, speaking and listening, and can motivate learners to reflect on issues in their locality and the world. The integration is especially pertinent in situations where English texts play a significant role in the topics and activities of the classroom.

ELT materials can support environmental literacy in several ways. Reading passages may introduce environmental concepts and explain causes and consequences. Poems and stories can develop emotional engagement with nature. Discussions and debates can expose students to competing positions. Writing tasks can require learners to argue for sustainable policies or propose solutions to local problems. Projects can connect classroom learning with the school or community environment. The educational value of such content, however, depends on its depth and the demands placed on learners. Environmental themes used only as backgrounds for grammar or vocabulary practice may contribute little to environmental understanding.

This pedagogical role of materials is particularly important in contexts where the textbook structures much of classroom practice. Karim et al. (2021) argue for a closer relationship between second-language acquisition research and materials development, emphasizing that instructional materials should translate research-informed principles into teachable tasks rather than functioning as repositories of content alone. Applied to environmental literacy, this means that environmental topics should be accompanied by language tasks that progressively develop interpretation, evaluation, communication, and action rather than stopping at factual comprehension.

Critical reading provides another useful connection between language learning and environmental education. Qanwal and Karim (2022) reported a relationship between critical-thinking pedagogy and critical-reading proficiency, while Qanwal et al. (2017) highlighted the role of metacognitive awareness in L2 reading comprehension. In the context of environment related ELT, the findings could be used to support tasks that require learners to identify points of view, to question assumptions, to compare pieces of evidence, to check understanding, to evaluate environmental solutions being proposed, or to reject the information presented in a textbook.

2.4 Textbooks as Carriers of Environmental Knowledge and Values

Textbooks are not impartial repository of linguistic contents. They choose specific subjects, viewpoints, representations, interactions, and types of knowledge. With this choice, textbooks convey ideas of society, development, nature and human responsibility. Their image of the environment can be that it is a source of beauty, a store of resources, a victim of human activity or a living system of intrinsic value. Anthropocentric or ecocentric conceptions of the relationship of humans and nature can be brought about by the representations.

An anthropocentric representation has humans' needs and interests as central. Nature can be represented primarily as the basis of agricultural, industrial, touristic or human welfare. Environmental protection can then be argued as a means of protection of human health or economic development. An ecocentric representation affords more recognition for the inherent value of ecosystems, animals, plants and other forms of life. It shows humans as part of ecological systems, not superior to or separate from nature. A well-rounded textbook might highlight human needs as well as ecological interdependence, limits, and responsibility.

In relation to the study of such representations, Stibbe's (2015) ecolinguistic approach is particularly relevant. Ecolinguistics explores the "stories" that are in the language and how they influence the attitudes and actions that people have toward the natural world. The vocabulary, metaphors, grammatical patterns, evaluation, erasure, and patterns of representation may convey these stories. While the present study focuses on environmental literacy and not a comprehensive ecolinguistic analysis, this thinking provides some understanding of the importance of the representation of nature and responsibility in textbook material.

Visuals also aid in environmental meaning. For example, photographs might depict unpolluted landscapes, cities smothered in pollution, animal life, natural disasters,

conservation efforts, or people's use of the natural world. The content of written and visual elements can help or hinder environmental messages. Without any theme of ecological danger, an image of natural beauty can stimulate feeling of pleasure or enjoyment, but not critical thought. However, using a combination of text, images, and activities can also help learners make links between environmental conditions and cause(s), responsibility, and potential actions.

2.5 Environmental Themes in ELT Textbook Research

One of the first research bouts on environmental content in ELT materials focused on the presence or absence of an ecological theme, and to what extent it was covered. Jacobs and Goatly (2000) discovered that environmental concerns appeared in English coursebooks but did not always offer learners challenges to their environmentally destructive beliefs and practices. The study was latter on extended throughout the usage of critical discourse analysis, Ecolinguistics, multimodal analysis and environmental education frameworks.

Xiong (2014) has analysed the superficial environmentalism in EFL textbooks in Chinese secondary schools. The materials recognised the issue of the environment but generally focused on this issue without challenging any broader social, economic and ideological issues. The significance of this finding is that it shows a difference between green themes being present and critical environmental understanding developing. Textbooks can encourage behaviors like saving water or planting trees, but fail to discuss industrial responsibility, consumer culture, policy or differential environmental effects.

Triyono et al. (2023) conducted a multimodal eco-critical discourse analysis of an Indonesian senior-high-school EFL textbook. Their analysis examined both textual and visual ecological discourse as well as the environmental skills embedded in textbook tasks. The study found that eco-beneficial discourse was more common than ambivalent or destructive discourse in both written and visual material. However, the pedagogical activities mainly addressed lower levels of environmental learning, with limited attention to higher environmental skills. This distinction shows that favourable environmental messages do not automatically produce strong environmental literacy when learning tasks remain cognitively limited.

Lee and Nguyen (2024) analyzed the treatment of environmental literacy in a set of ELT textbooks used in Vietnam. The study is directly relevant because it approached textbooks as potential resources for environmental education rather than examining ecological language alone. Its focus shows the trend and interest of not only looking at frequency of environmental topics but also looking at how many of them contribute to various aspects of environmental literacy. This work highlights the need to systematically investigate the content related to the environment in texts, images and pedagogical tasks.

Today's Coursebook studies have also highlighted the need for critical and action-based learning. In the analyses of EFL materials, it is often found that the subjects of the environment are conveyed through factual knowledge and personal moral behavior, and less attention is paid to investigation, collective responsibility, structural causes, and participation in the environment. It appears that this pattern may be one that supports awareness while failing to build competence and agency in textbooks.

2.6 Environmental Discourse in Pakistani English Textbooks

The study of environmental content in Pakistani English Textbooks has been relatively scarce, and there are studies that have suggested some common deficiencies. Zahoor and Janjua (2020) did an "ecolinguistic and ecopedagogical appraisal of environmental texts in English language textbooks for primary level in Pakistan. By employing an adapted ecopedagogical approach and transitivity analysis they identified that the materials selected generally depicted nature in an anthropocentrist worldview. There was a tendency to depict nature in terms of its usefulness to people, but also little interest in its deeper bonds and ecopedagogical connections. Overall, their results showed that there can be content on the environment without contesting human-centered approaches.

Some studies have only been carried out on the textbooks of Punjab and focus on eco-pedagogical discourse. As far as the general findings in these studies are concerned, in general, environmental themes are found within English textbooks, however they have been reported as being under-represented and linked weakly to critical environmental literacy and/or action-oriented tasks. A recent study of Pakistani EFL textbooks also revealed that the language of environment reduced as the grade level from Primary to Secondary and contents of the textbooks

were mostly of sensory or experiential descriptions of nature. Whilst there was some positive discussion of green behaviours, this did not always lead to greater ecological awareness.

While these Pakistani studies offer valuable background, the investigation of most interesting of the textbooks has adopted mainly an ecolinguistic, ecocritical, discourse analysis or human–nature relationship approach. They have focused on questions related to anthropocentric, ambivalent, destructive, and ecocentric worldviews offered by language and images. This work demonstrates the way that nature is discursed in textbooks but fails to pay sufficient systematic attention to the educational aspects of environmental literacy.

2.7 Pedagogical Tasks and the Depth of Environmental Learning

Analysis of pedagogical tasks is needed because in addition to what the textbook shows, it is also what the textbook requires the student to do that determines what manner the environmental learning will be carried out. A passage on climate change with factual questions can progress to recognition and understanding. Learners are required to make comparisons between causes, to evaluate competing solutions or to develop a local response, which requires a higher level of environmental competence. Therefore, environmental literacy must be measured and evaluated using content and task design.

Pedagogical activities may be considered as moving along a series of levels. Students get information about the environment and remember facts at the first level. At the second level they state values of the environment and show awareness or concern. On the third level, they explore causes, make inferences from evidence, compare and contrast perspectives and solve problems. At the fourth level they make decisions and plan action or communicate an environmental message or engage in action. Progression mirrors the difference between environmental problem awareness and having the competence and inclination to address the problem.

This is well explained by the study of Fath and Triyono (2023). Although their selected textbook contained mainly eco-beneficial discourse, the activities concentrated on the lowest environmental education skills. This implies that there is a gap between positive representation and pedagogical depth. A textbook can say that protecting the environment is a good thing, but it can't give the learner a chance to look at complexity, consider responsibility, or take action.

This concern also comes out in the research done in Pakistan with the message for the environment often being conveyed in terms of moral lessons, appreciation of natural beauty or in terms of simple individual behaviours. Treatment like this can reinforce positive attitudes, but can also under-represent competencies like investigation, evidence-based judgment, collective decision and civic engagement. This means that the environmental literacy analysis should be able to reveal the presence of tasks as well as the required educational demands.

2.8 Research Gap

The literature examined shows that English textbooks can provide EE, and that this EE may be of varying degrees. Research on ecological themes, shallow environmentalism, multimodal discourse and environmental skills has been conducted on an international level. The weak representation of nature, the absence of anthropocentric language, lack of learner participation, and inadequate treatment of human–nature relation have been brought to the limelight through the Pakistani studies. There are however three gaps remaining.

First, most of the existing work on Pakistan is conducted from a point of view of an ecolinguistic and/or ecocritical analysis of discourse. While these approaches are useful for guiding the analysis in relation to language, ideology, and representation, they may not necessarily assess environmental literacy as a multi-faceted learning construct which includes knowledge, attitudes, competencies, and action.

Second, existing research tends to concentrate on specific bits of environment that have been included or portrayed in textbooks, rather than analysing systematically all the textbook elements (prose, poetry, images, captions, exercises, speaking tasks, writing tasks, projects, and so on) related to the environment. This could create a partial picture of the learning environments in the books.

Third, there has been less research on pedagogical tasks than on environmental themes and discourse. Environmental content is not an indicator of whether learners will be expected to recall, value, investigate, make decisions or act responsibly in response to the environmental information they are dealing with. A

systematic task analysis (STA) is therefore needed to determine the level of environmental literacy.

The current study aims to fill these gaps by focusing on environmental knowledge, attitudes and values, environmental skills and responsible action in the analysis of secondary level English textbooks prescribed for Punjab. It also studies the portrayal of nature and the role of human beings as well as pedagogical assignments that are related to environmental content. This integrated approach makes it possible to find out whether environmental problems exist in the textbooks, how the problems are described and how textbook activities promote meaningful environmental literacy.

2.9 Research Questions

- RQ1. What environmental themes and dimensions of environmental literacy are represented in the Grade IX and Grade X English textbooks?
- RQ2. How do the textbooks represent nature, environmental problems, and human responsibility?
- RQ3. To what extent do textbook activities promote environmental information, awareness and values, critical understanding, and action-oriented learning?
- RQ4. What progression and gaps in environmental literacy are evident between Grade IX and Grade X?

3. RESEARCH METHODOLOGY

3.1 Research Design

A qualitative content analysis design with descriptive quantitative analysis was used in the study. Qualitative content analysis was seen as suitable since it provides for systematic examination of meanings, themes, representations, values and pedagogical patterns in educational materials (Schreier, 2012). The distribution of environmental themes and dimensions of environmental literacy in the selected textbooks were also displayed by using frequency counts and percentages. This blend allowed us to ask, not only was there an environmental focus, but how did it take shape?

The coding was done using the deductive approach. Analysis categories were largely based upon the conceptual frameworks from environmental literacy literature, specifically the framework proposed by Hollweg et al. (2011) that considered environmental literacy as encompassing knowledge, dispositions, competencies and environment-related actions. These dimensions were translated into the context of English language textbooks.

3.2 Research Materials

The data consisted of the secondary-level English books prescribed for IX and X in Punjab. The choice of these textbooks is based partially on the fact that they are the ones most used in public schools and are important instructional materials for English language teaching at the secondary level. All textbooks were analysed to make sure that the whole content was analysed to include all relevant environmental information.

The study does not limit the analysis to be done only for complete lessons or chapters. Rather, everything related to the environment was included in the textbook, both direct and indirect. These comprised:

- prose passages;
- poems;
- dialogues;
- short stories;
- images and illustrations;
- captions;
- vocabulary activities;
- comprehension questions;
- speaking tasks;
- writing activities;
- projects; and
- end-of-unit exercises.

3.3 Unit of Analysis

The unit of analysis was defined as any textual, visual, or pedagogical element that included the theme of environment, or a human-nature relation (or implied relation), or that involved the student in an environmental issue.

If a single sentence, paragraph, image, exercise, activity or project expressed a fully formed environmental message it was coded as a single unit. If a textbook item had more

than one environmental dimension, then it was coded for multiple categories as appropriate. For instance, a text relating to water pollution and a question for students to propose actions to address it may be classified in the environmental knowledge section, environmental skills section, and environmental action section.

3.4 Conceptual and Analytical Framework

The coding framework was based primarily on the environmental literacy model developed by Hollweg et al. (2011). For the purpose of this study, the framework was adapted into four main dimensions:

3.4.1 Environmental Knowledge

This dimension included factual and conceptual information related to:

- climate change;
- pollution;
- deforestation;
- biodiversity;
- wildlife;
- water scarcity;
- waste management;
- renewable energy;
- natural resources;
- ecosystems;
- conservation; and
- sustainable development.

A textbook item was coded under environmental knowledge when it introduced, explained, described, or provided information about an environmental issue.

3.4.2 Environmental Attitudes and Values

This dimension included expressions that encouraged:

- appreciation of nature;
- respect for animals and plants;
- concern for environmental damage;
- environmental responsibility;
- conservation values;
- sustainable lifestyles;
- care for natural resources; and
- ethical treatment of the environment.

Textbook content was coded under this category when it promoted emotional, moral, or value-based responses toward the environment.

3.4.3 Environmental Skills

This dimension included tasks requiring learners to:

- identify causes and effects;
- compare environmental conditions;
- interpret information;
- investigate environmental problems;
- evaluate alternatives;
- solve problems;
- make decisions;
- analyze responsibility; or
- propose solutions.

Tasks limited to copying, defining, matching, or recalling factual information were not coded as environmental skills unless they required interpretation or higher-level engagement.

3.4.4 Environmental Action

This category included content that encouraged learners to:

- conserve water or energy;
- plant trees;
- reduce waste;
- recycle;
- participate in environmental campaigns;
- prepare awareness materials;
- conduct projects;
- communicate environmental messages;
- take part in community activities; or
- adopt sustainable practices.

A distinction was maintained between statements that merely recommended responsible behaviour and tasks that required learners to plan, discuss, perform, or communicate an environmental action.

3.4.5 Environmental Themes

In addition to the four environmental literacy dimensions, environmental content was coded according to thematic categories. The initial categories included:

- climate change;
- air pollution;
- water pollution;
- land pollution;
- deforestation;
- biodiversity loss;
- wildlife conservation;
- water conservation;
- waste management;
- energy use;
- natural disasters;
- agriculture and land use;
- sustainable living;
- human health and environment; and
- environmental protection.

New categories were added during coding when relevant themes appeared that were not adequately represented in the initial framework. This allowed the coding system to remain theoretically informed while also responding to the actual textbook content.

3.4.6 Representation Of Human–Environment Relationships

The study also examined how nature and environmental responsibility were represented. The following categories were used:

- nature as a resource;
- nature as a source of beauty;
- nature as a threatened system;
- humans as protectors of nature;
- humans as exploiters of nature;
- individual environmental responsibility;
- community responsibility;
- institutional or governmental responsibility; and
- shared human–environment interdependence.

These categories were included because environmental literacy depends not only on the presence of environmental information but also on how textbooks frame the relationship between humans and the natural world. The analysis therefore considered whether the textbooks adopted mainly anthropocentric, conservation-oriented, or ecocentric perspectives.

3.5 Analysis of Pedagogical Tasks

Textbook tasks related to environmental content were further classified according to the level of learner engagement they required. Four levels were used:

Level	Description
Level 1: Information	Learners identify, recall, define, or reproduce environmental facts.
Level 2: Awareness and values	Learners express concern, appreciation, responsibility, or personal attitudes.
Level 3: Critical understanding	Learners analyze causes, compare viewpoints, evaluate consequences, or propose solutions.
Level 4: Action-oriented learning	Learners plan, communicate, or participate in an environmental action or project.

This classification helped determine whether the textbooks merely presented environmental information or supported deeper environmental understanding and responsible participation.

Corpus boundary. In the Grade IX volume, extra dengue and coronavirus awareness pages were not included in the analytical corpus as these are not numbered textbook units in the formal sequence of instruction. These were thus not considered as environmental coding units nor were they considered when calculating frequencies.

3.5.1 Coding Procedure

Coding process was done in several steps. In the first, the two textbooks were examined closely to find all passages, images, tasks and exercises with environmental

content. Each relevant item was entered into a coding sheet, and information was gathered on both textbook and grade level, unit, page number, content type, environmental theme, environmental literacy dimension, representation category and task level.

Second, every identified item was coded in line with the analytical framework. The coding focused on explicit environmental references as well as implicit meanings where the relationship with environmental literacy was clear. General references to scenery, weather, or natural beauty were not coded unless they contributed to an environmental theme, value, representation, or learning task.

Third, the coded data were reviewed to identify overlap, ambiguity, and inconsistency. Categories were refined where necessary, and coding definitions were clarified before the final analysis.

A sample coding format is presented below:

Textbook	Unit/Page	Content Type	Environmental Theme	Knowledge	Attitude	Skill	Action	Representation	Task Level

3.5.2 Intercoder Reliability

To assess the reliability of the coding framework, a reliability sample of 25 environmentally relevant coding units was selected from the Grade IX and Grade X textbooks and independently coded by a second coder. The sample represented diverse forms of textbook material, including literary texts, expository passages, visual material, comprehension activities, writing tasks, civic communication activities, and environmental problem-solving exercises. Both coders applied the same operational codebook to classify the four environmental literacy dimensions—environmental knowledge, attitudes and values, environmental skills, and environmentally responsible action—as well as pedagogical depth, human–environment representation, responsibility, and action status.

Intercoder agreement was assessed using Cohen's kappa (κ), which corrects observed agreement for agreement expected by chance (Cohen, 1960). The two coders agreed on all 25 sampled units for every coding category. Observed agreement was 100% and Cohen's κ was 1.00 for environmental knowledge, attitudes and values, environmental skills, environmentally responsible action, pedagogical depth, human–environment representation, responsibility, and action status. These results indicate perfect agreement in the application of the coding framework. The coding scheme was therefore retained for analysis of the complete textbook corpus.

Table 1:. Intercoder reliability results for the coding framework

Coding category	n	Observed agreement	Cohen's κ
Environmental knowledge	25	100%	1.00
Attitudes and values	25	100%	1.00
Environmental skills	25	100%	1.00
Environmentally responsible action	25	100%	1.00
Pedagogical depth (L1–L4)	25	100%	1.00
Human–environment representation	25	100%	1.00
Responsibility category	25	100%	1.00
Action status	25	100%	1.00

3.6 Data Analysis

The final analytical corpus comprised 25 environmentally relevant coding units: 12 from Grade IX and 13 from Grade X. Each unit could receive more than one environmental-literacy code when warranted; consequently, percentages for the four dimensions are not mutually exclusive and may sum to more than 100%. Frequencies and percentages were calculated using the number of coding units within each grade (Grade IX n = 12; Grade X n = 13) and across the combined corpus (N = 25) as the denominator. Pedagogical-depth categories were mutually exclusive because each unit was assigned its highest substantive level of learner engagement.

- the types of pedagogical tasks; and

Qualitative interpretation was used to examine how environmental issues were presented, what forms of responsibility were emphasized, which perspectives were excluded, and whether tasks supported factual learning, critical engagement, or environmental action. Representative textbook examples were included in the findings to support the interpretation.

3.6.1 Trustworthiness of the Analysis

Several measures were used to strengthen the trustworthiness of the study. The coding categories were derived from established literature, the whole textbook corpus was examined, explicit coding definitions were prepared, pilot coding was conducted, and intercoder reliability was assessed on 25 coding units. Perfect agreement was obtained across all assessed coding categories ($\kappa = 1.00$; observed agreement = 100%). An audit trail was also developed, including coding sheets and category definitions and specified decisions on coding recorded. These procedures helped ensure consistency, transparency and reproducibility of the analysis.

3.6.2 Ethical Considerations

There was no human participation in the study, just publicly available educational documents. As a result, none of the personal information was gathered. The textbooks used were only for academic analysis and all examples that were taken from the textbooks are reported correctly and in context. Throughout the study, proper references of the theories and textbooks were observed.

3.6.3 Methodological Limitation

The study was confined to specific textbooks of English for Classes IX and X for Punjab. It looked at the environmental literacy opportunity given by textbooks but not how the teachers performed in implementing the content in classrooms and how students were reacting to environmental content. The findings thus represent the potential of the textbooks not necessarily their actual impact in the classroom.

4. ANALYSIS AND FINDINGS

The results from analysing the Grade IX and Grade X English textbooks showed that the treatment of environmental literacy was unevenly distributed throughout both books, in terms of the treatment and pedagogical approaches. Content on environment is only focused on a few units in textbooks and not included in a consistent manner. While the Grade IX book primarily fosters nature conservation and sensitivity to an issue of local pollution, the Grade X book covers the topics of natural hazards, depletion of natural resources, food security, water scarcity, biodiversity and sustainability in a more general manner. These supplementary sections, namely on Dengue and Corona Virus, were not included in the Grade IX textbook as they are not found in the primary sequence of textbook units.

Results are presented in line with the four components of environmental literacy used in the study: environmental knowledge, environmental attitudes and values, environmental skills and environmental action. The pedagogical depth of the environmental content, moving from information and awareness to critical understanding and learning for action is also taken account of.

4.1 Distribution of Environmental Content across the Textbooks

Environmental content is not distributed evenly across the units. In the Grade IX textbook, the most environmentally relevant material appears in Daffodils, Sultan Ahmad Masjid, Stopping by Woods on a Snowy Evening, Noise in the Environment, and Three Days to See. A limited environmental reference also appears in Media and Its Impact through a visual newspaper headline concerning climate change and freshwater availability. The remaining units primarily address religious, historical, national, social, or personal-development themes and contain no substantive environmental learning.

Among the Grade IX units, Noise in the Environment is the only full lesson explicitly organized around an environmental problem. The unit introduces noise as a form of pollution, identifies its causes and effects, discusses permissible noise levels, and suggests individual and institutional measures for its control. By comparison, Daffodils, Stopping by Woods on a Snowy Evening, and Three Days to See present the natural world primarily through literary and aesthetic experience.

In the Grade X textbook, environmental content is more extensive and conceptually varied. It appears most clearly in The Rain, Peace, and Population Growth and World Food Supplies. Relevant environmental tasks also occur in the review sections, particularly the material on monsoon disaster management. Smaller environmental references occur in Little by Little One Walks Far! through the Environmental Awareness Club and a sample letter requesting a watershed map, and in Television vs. Newspapers through a formal complaint concerning rain-damaged roads.

The distribution thus shows a progression between the two grades. In Grade IX, the concept of Nature

Appreciation, Pollution Awareness and Individual Responsibility (Environment) are introduced and Grade X extends the concept to Resource Scarcity, Agricultural Sustainability, environmental management and institutional responsibility.

The most common dimension across the 25 coding units was environmental knowledge (20 units, 80.0%), followed by attitudes and values (19, 76.0%), environmental skills (14, 56.0%) and environmental action (10, 40.0%). As multiple coding is allowed these percentages indicate the percentage of units of coding in which each dimension was included and do not necessarily add up to 100%. The Grade X had a higher percentage of knowledge, skills and action codes compared to Grade IX while the Grade IX had a higher percentage of attitudes and values.

Table 2:. Distribution of environmental-literacy dimensions by grade

Dimension	IX n	IX %	X n	X %	Total n	Total %
Knowledge	8	66.7	12	92.3	20	80.0
Attitudes/values	10	83.3	9	69.2	19	76.0
Skills	6	50.0	8	61.5	14	56.0
Action	4	33.3	6	46.2	10	40.0

4.2 Environmental Knowledge

Environmental knowledge refers to students' understanding of environmental conditions, processes, problems, causes, consequences, and possible responses.

4.2.1 Environmental Knowledge in Grade IX

Environmental knowledge in the Grade IX textbook is narrow and concentrated mainly in Noise in the Environment. The unit explains that noise pollution is produced by traffic, construction activity, machinery, generators, mobile phones, television, music systems, and loud speech. It also links excessive noise with physical and psychological consequences such as hypertension, aggression, stress, hearing loss, restlessness, depression, and insomnia. This provides a first-hand cause and effect knowledge for the familiar problem of an urban environment.

The unit also provides a briefing on regulatory framework and institutional awareness of acceptable noise levels and the activities of Punjab Environmental Protection Agency. This is important because the protection of the environment is not only personal behaviour; there are governmental standards and regulation in order.

The information covered in the nature based literary units is less scientific. In Daffodils, students are introduced to the natural world as flowers, trees, a lake, a breeze, stars and waves that are part of a beautiful landscape but are not part of an ecosystem. The poem describes the daffodils as:

"Beside the lake, beneath the trees,
Fluttering and dancing in the breeze."

The accompanying explanation describes nature as having a "healthy, ennobling, purifying and enduring impact" on human beings. The focus is therefore on the emotional effect of nature rather than ecological relationships.

Similarly, Stopping by Woods on a Snowy Evening introduces woods, snow, darkness, and silence, but does not explain forest ecology, biodiversity, weather systems, or conservation. Three Days to See includes more detailed observation of leaves, tree bark, flowers, birds, streams, grass, and seasonal change. It develops familiarity with natural objects, yet it remains experiential rather than scientific.

A climate-change reference appears in the visual material accompanying Media and Its Impact, where a newspaper headline states that climate change will reduce freshwater availability. However, the lesson does not explain this relationship, and no related comprehension or writing task requires students to investigate it. Climate change is therefore visible in the textbook but not developed as a body of knowledge.

4.2.2 Environmental Knowledge in Grade X

Environmental knowledge is more developed in Grade X. The Rain introduces rainfall as a beneficial natural process that supports plant life. The poem states:

"I hear leaves drinking rain;
I hear rich leaves on top
Giving the poor beneath
Drop after drop."

This representation shows rain as a life-supporting resource, although it is also used metaphorically to represent the unequal distribution of wealth. The pre-reading question asking about the possible results of

excessive rainfall broadens the treatment by introducing the damaging effects of natural processes.

Peace presents another aspect of environmental knowledge by depicting wind as both life-giving and destructive. The poem describes the wind as:

"a roaring, smashing
monster of destruction,
raking all man's work
from the valleys."

The supporting theme is that with rough wind, trees, fields and houses are broken and with soft wind, buds, birds and people are helped. Basic awareness of natural hazards and the dual nature of natural forces is therefore developed in the unit.

Environmental knowledge is at its highest level in Population Growth and World Food Supplies. The unit clearly links population growth to pressure on "arable land, water, energy and biological resources". It shows that food production relies on fertile land, freshwater, energy, biodiversity and that the more people there are, the more competitive they are for these resources.

The lesson discusses several interconnected environmental issues:

- loss of fertile agricultural land;
- declining land productivity;
- pressure on rivers, lakes, aquifers, and groundwater;
- extensive freshwater consumption by agriculture;
- fossil-energy use in fertilizers, pesticides, irrigation, and machinery;
- the finite nature of fossil fuels;
- soil erosion;
- technological limitations;
- biodiversity conservation;
- sustainable agricultural production.

A particularly significant statement is that "a productive and sustainable agricultural system depends on maintaining the integrity of biodiversity." The unit also emphasizes that technology may improve resource management but cannot provide an unlimited supply of finite natural resources.

This unit provides the most integrated environmental explanation in either textbook. It connects ecological systems with demographic, social, and economic pressures. However, it attributes environmental scarcity largely to population growth and gives less attention to unequal consumption, food waste, poverty, distribution systems, industrial agriculture, and environmental inequality.

4.3 Environmental Attitudes and Values

Environmental attitudes and values include appreciation of nature, concern for environmental quality, recognition of human responsibility, and willingness to protect natural and public environments.

4.3.1 Nature Appreciation in Grade IX

The strongest environmental dimension in Grade IX is affective appreciation of nature. Daffodils presents nature as a source of joy, memory, emotional recovery, and inner peace. The speaker recalls "a host of golden daffodils," while the waves and flowers appear to dance. The natural scene continues to provide pleasure even after the direct experience has ended:

"And then my heart with pleasure fills,
And dances with the daffodils."

The textbook asks the students to discuss "various aspects of nature" and share their emotions on the poem. This goes beyond direct understanding and allows a personal emotional response. But the appreciation of nature is also very subjective to its positive impact on human emotions. Thus, the perspective is anthropocentric – nature has value to humans because it is good for their health, good for their bodies and good for their happiness.

Stopping by Woods on a Snowy Evening also evokes natural environments as seductive, still, and contemplative. Learners enjoy the beauty and tranquility of the woods but are not encouraged to think about the value of the woods in terms of ecology or conservation.

Three Days to See enhances the sensitivity for the environment by bringing attention to the lack of environmental awareness. Helen Keller describes touching tree bark, examining leaves and flowers, listening to birds, and feeling the cool water of a stream. The passage encourages close attention to ordinary natural experiences and suggests that familiarity often leads people to overlook environmental beauty.

4.3.2 Environmental Responsibility in Grade IX

A more direct environmental value appears in the dialogue "Litter Bug!" included in Sultan Ahmad Masjid. In this dialogue, a student throws a plastic bag into the street. Another character comments:

"He doesn't care about our environment. He's a litter bug."

The dialogue continues with the statement that there is "too much pollution" and that "Everybody should care about environment." The boy is then told to pick up the waste. This brief exchange promotes cleanliness, anti-littering behaviour, responsibility for public spaces, and peer correction of environmentally harmful conduct.

Noise in the Environment also promotes civic responsibility. It presents unnecessary noise as a violation of others' comfort and health and encourages students to recognize that environmental quality depends on responsible behaviour.

4.3.3 Environmental Values in Grade X

Grade X combines appreciation of nature with concern for resource conservation and human security. The Rain encourages learners to appreciate rainfall, leaves, sunlight, and natural sound. The learning outcomes explicitly state that students will "understand and appreciate nature." This makes nature appreciation an intended learning goal.

The unit also presents equality through natural symbolism. The upper leaves receive the rain first, while the lower leaves receive what passes down. The sun, by contrast, shines equally on all. Although the primary interpretation is social, the poem promotes a positive emotional relationship with natural phenomena.

Peace promotes respect for nature's power. Wind is represented not only as beautiful or gentle but also as capable of destroying human work. This discourages an overly passive or romantic image of nature and introduces the idea that human beings must recognize natural limits.

Population Growth and World Food Supplies develop conservation-oriented values. Its final section calls for "the conservation and careful management of land, water, energy, and biological resources" and states that maintaining "a sound and productive environment" is essential. It also introduces responsibility toward future generations by emphasizing the need to ensure future food supplies.

The dominant value orientation remains anthropocentric. Environmental protection is justified mainly because human beings need food, water, energy, safety, health, and economic stability. The intrinsic value of ecosystems, species, and non-human life is rarely considered.

4.4 Environmental Skills

Environmental skills involve observation, investigation, interpretation, cause-and-effect analysis, problem-solving, evidence gathering, evaluation, and communication.

4.4.1 Skills in Grade IX

The most developed environmental skills appear in Noise in the Environment. Students are required to analyze cause-and-effect relationships and distinguish among the causes, effects, and solutions of noise pollution. The unit asks learners to complete organizational activities and identify practical methods of controlling noise.

A particularly important activity asks students to identify sources of noise around their school and propose a practical solution for each source. This develops:

- local environmental observation;
- problem identification;
- collaborative analysis;
- solution formation;
- oral presentation.

The task moves beyond simple comprehension because students must apply textbook knowledge to their own surroundings.

The literary units develop more limited skills. In Daffodils, students identify imagery, simile, metaphor, and personification and discuss how language represents nature. This supports interpretive literacy but not environmental problem-solving.

Three Days to See develops observational sensitivity. Learners are encouraged to notice natural objects and sensory detail, but they are not required to conduct systematic environmental observation or record evidence.

4.4.2 Skills in Grade X

Grade X offers broader environmental skill development. In The Rain, students must collect information from newspapers and magazines on recent monsoon rains and prepare a group presentation on "Suggestions to Deal with Monsoon Rains." This task develops:

- environmental information searching;
- selection of relevant evidence;
- media literacy;
- organization of findings;
- collaborative problem-solving;
- oral communication.

The further-reading activity reinforces this by requiring newspaper headlines, articles, and letters concerning monsoon rains.

This grade X review passage on monsoon disaster management is particularly important. It provides practical measures like education of rural community, evacuation, safeguarding of livestock, strengthening embankment, pumps and boats, cleaning of drainage and preparing medical team. Students are asked to identify the writer's position, supporting points, proposed solutions, and whether they agree with the recommendations.

These questions require evaluation rather than recall. Learners must interpret a policy-oriented text and assess the adequacy of proposed responses.

Population Growth and World Food Supplies develop cause-and-effect reasoning. Students examine how population growth affects land, water, energy, food supply, and biodiversity. The unit includes a graphic organizer requiring learners to map causes, effects, and solutions. It also asks questions such as:

- Why are developing countries more vulnerable?
- How are water resources placed under stress?
- What are the limitations of improved technology?
- What strategies should be adopted for the future?

These questions encourage system thinking because students must understand relationships among demographic growth, ecological limits, agriculture, technology, and food security.

Nevertheless, neither textbook gives much attention to quantitative environmental skills. Students are not required to interpret graphs, compare datasets, calculate water use, assess carbon emissions, analyze environmental indicators, or evaluate competing scientific evidence.

4.5 Environmental Action

Environmental action refers to activities that encourage learners to apply knowledge through personal, school-based, civic, or community engagement.

4.5.1 Action in Grade IX

The Grade IX textbook contains a small number of action-oriented tasks. The "Litter Bug!" dialogue models' immediate individual action by requiring the person who throws a plastic bag into the street to pick it up. This represents direct personal responsibility, although the activity itself remains a role-play rather than an implemented environmental project.

Noise in the Environment contains stronger action potential. Students identify school noise sources, propose solutions, and present a control plan. The writing section also includes environmental civic tasks, such as:

- writing about the effects of land pollution on human health;
- applying to the principal for separate bins for paper, plastic, glass, and other dry waste;
- writing to an Environmental Protection Agency officer about irregular solid-waste collection.

These tasks use English for environmental communication and engagement with institutional authorities. They therefore represent action-oriented learning, even though the textbook does not require students to send the letters, install the bins, or monitor waste practices.

4.5.2 Action in Grade X

Environmental action in Grade X is generally communicative, institutional, or hypothetical rather than directly implemented.

The monsoon task in The Rain requires students to prepare recommendations for dealing with monsoon hazards. Review II develops this further by presenting measures directed toward governments, disaster-

management authorities, irrigation departments, sanitation departments, security agencies, and medical teams.

The formal letter exercise in Television vs. Newspapers asks students to rewrite a complaint to the Lahore Development Authority about potholes caused by severe rainy weather. The writer demands road repair and improved future preparedness. This activity trains learners to communicate environmental and infrastructure concerns through formal civic channels.

Little by Little One Walks Far! briefly refers to participation in an Environmental Awareness Club. It also presents a sample formal letter in which a student requests a map of the Mangora watersheds from the Department of Ecology for a water-resources project. These references show environmental participation and information-seeking, but the unit does not develop them into full student projects.

Population Growth and World Food Supplies advocates the implementation of conservation strategies. Students' work, however, continues to be presentations, précis writing, essays. They do not have to audit the local water usage, study food waste, look at soil degradation or do a community conservation project.

In both books, there is therefore some level of environmental action, which is typically limited to awareness, planning, formal writing, and solutions proposed.

4.6 Pedagogical Depth of Environmental Learning

The analysis shows that the textbooks operate at four levels of environmental learning.

Level 1: Environmental Information

Grade IX contains only information related to noise pollution and Grade X has information on rainfall, natural disasters, population growth, food supply, water scarcity, land degradation, energy depletion and biodiversity.

The most solid information is on the topics of Noise in the Environment and Population Growth and World Food Supplies.

Level 2: Environmental Awareness and Appreciation

The primary level in the literary units. Daffodils, Stopping by Woods on a Snowy Evening, Three Days to See, The Rain and Peace allow students to enjoy flowers, trees, woods, rain, sun, birds, streams, wind and nature in general.

The emphasis is on emotional response and personal reflection rather than environmental explanation.

Level 3: Critical Understanding

Critical understanding appears when learners analyze causes, effects, problems, and solutions. Examples include:

- analysing the causes and effects of noise pollution;
- examining excessive rainfall and monsoon damage;
- evaluating disaster-management recommendations;
- analysing population pressure on land, water, food, energy, and biodiversity;
- questioning the limitations of technological solutions.

This level is stronger in Grade X than in Grade IX.

Level 4: Action-Oriented Learning

Action-oriented learning is present in:

- the anti-littering dialogue;
- school noise-control planning;
- applications for separate waste bins;
- complaints about solid-waste collection;
- monsoon-management recommendations;
- formal complaints about rain-damaged roads;
- watershed information requests;
- references to environmental clubs.

However, most activities involve planned, written, or simulated action rather than sustained practical engagement.

Pedagogical depth also differed by grade. Grade IX contained three Level 1 information units (25.0%), four Level 2 awareness/value units (33.3%), one Level 3 critical-understanding unit (8.3%), and four Level 4 action-oriented units (33.3%). Grade X contained one Level 1 unit (7.7%), two Level 2 units (15.4%), five Level 3 units (38.5%), and five Level 4 units (38.5%). The shift toward Level 3–4 in Grade X indicates stronger analytical and

action-oriented task design, although Level 4 frequently consisted of simulated or planned action.

Table 3:. Pedagogical depth of environmental coding units

Level	IX n	IX %	X n	X %	Total n	Total %
L1 Information	3	25.0	1	7.7	4	16.0
L2 Awareness/values	4	33.3	2	15.4	6	24.0
L3 Critical understanding	1	8.3	5	38.5	6	24.0
L4 Action-oriented	4	33.3	5	38.5	9	36.0

4.7 Representation of Human–Environment Relationships

The two textbooks construct several different relationships between human beings and the environment.

4.7.1 Nature as a Source of Beauty and Emotional Well-Being

This is most visible in Daffodils, Stopping by Woods on a Snowy Evening, Three Days to See, and The Rain. Nature is presented as joyful, peaceful, restorative, and worthy of appreciation.

4.7.2 Nature as a Source of Risk

Noise in the Environment, The Rain, Peace, and the monsoon-disaster material show that environmental conditions can threaten health, safety, infrastructure, agriculture, and livelihoods.

Noise pollution is not naturally occurring and storms and floods are natural events whose impacts are also affected by human planning and management.

4.7.3 Nature as a Resource System

The book Population Growth and World Food Supplies focuses on land, water, energy and biodiversity as resources required for food production and economic survival. This is the most well-developed systems-based depiction in the textbooks.

4.7.4 Humans as Environmental Polluters

Humans are shown causing environmental harm through:

- littering;
- plastic disposal;
- excessive noise;
- overuse of water;
- depletion of fossil fuels;
- pressure on agricultural land;
- unsustainable resource demand.

Humans as Environmental Managers

Humans are also represented as capable of:

- controlling pollution;
- reducing school noise;
- separating waste;
- communicating with environmental authorities;
- preparing for monsoon disasters;
- conserving land, water, energy, and biological resources;
- managing agricultural systems sustainably.

The dominant ideological orientation is anthropocentric. Nature is valued mainly for its usefulness, beauty, contribution to human well-being, and role in supporting food and economic systems. Ecocentric perspectives are limited because the textbooks rarely recognize the independent value of species, habitats, and ecosystems.

4.8 Major Environmental Themes and Omissions

Across both textbooks, the main environmental themes are:

- nature appreciation;
- noise pollution;
- littering and waste;
- rain and monsoon hazards;
- natural disasters;
- population growth;
- food security;
- land degradation;
- water scarcity;

- fossil-energy depletion;
- biodiversity;
- resource conservation;
- agricultural sustainability;
- civic and institutional responsibility.

The textbooks provide little or no sustained treatment of:

- climate change;
- greenhouse-gas emissions;
- air pollution;
- water pollution;
- deforestation;
- wildlife conservation;
- renewable energy;
- plastic pollution as a major issue;
- ecological restoration;
- environmental justice;
- sustainable consumption;
- food waste;
- unequal resource use.

Climate change is not explored in teaching content or activities, with only a brief mention in a Grade IX visual. Thus, this omission matters as some of the issues covered in Grade X (like monsoon disasters, water scarcity, food insecurity, agricultural stress etc.) could have been directly related to climate change.

4.9 Comparative Interpretation of Grade IX and Grade X

Environmental literacy is introduced and is mostly affective in Grade IX. It promotes an appreciation of the environment and awareness of problems in the local environment, e.g., noise and littering. The environment task areas are typically at school, home, or personal level.

Grade X expands upon the environment. It exposes learners on the linkages between Population, Agriculture, Food, Land, Water, Energy, Biodiversity and Technology. But it also places more emphasis on the management of disasters and on the role of government.

The progression between the grades can be summarized as follows:

Table 4:. Progression between the Grades

Dimension	Grade IX	Grade X
Environmental knowledge	Narrow; concentrated in noise pollution	Broader; includes land, water, energy, food, biodiversity and hazards
Attitudes and values	Strong nature appreciation	Nature appreciation plus conservation and future responsibility
Environmental skills	Observation and local problem-solving	Cause-effect analysis, media research, evaluation and institutional communication
Environmental action	Litter control, waste bins, school noise plans	Disaster recommendations, civic complaints, watershed requests and conservation proposals
Dominant orientation	Aesthetic and local	Resource-based, sustainability-oriented and institutional
Ecocentric perspective	Weak	Weak, although biodiversity is mentioned

Grade X therefore represents a conceptual advancement over Grade IX. However, environmental literacy remains uneven in both books, and environmental issues are still confined to a limited number of lessons and tasks.

4.10 Overall Analytical Finding

The analysis shows that the English textbook of Grade IX and Grade X in the perspective of environmental literacy is only done partly. They manage to give learners first exposure to natural beauty, environmental health, pollution, weather hazards, resource scarcity and conservation. Additionally, they employ language learning activities like discussion, presentation, formal writing, cause and effect analysis and engage students with environmental issues.

But integration is not systematic. Environmental content is not continuous, is not well organized in terms of learning progressions, and lacks the support of instructional text from the textbooks. Affective dimension is more prominent than ecological dimension, especially in the literary units.

The textbooks devote little space to ecosystem services and are more likely to ask students to appreciate nature than to examine natural processes or reasons for conserving them for their own sake.

At times, the books veer toward critical and action-oriented environmental learning – for example, in school-noise planning, writing letters about waste, proposals for monsoon-management, and arguments for resource-conservation. However, most actions to help the environment has a hypothetical, textual, or academic dimension. Students are seldom asked to conduct an ongoing investigation in the field, undertake an environmental project, evaluate outcomes and direct community environmental decisions.

Grade IX could be described as having a moderate level of environmental awareness and not a lot of environmental depth and grade X has a wider level of environmental awareness knowledge and more critical engagement but still not a lot of direct action. The textbooks, combined, lay the groundwork for environmental literacy; however, they do not present a definitive or progressive environmental education model, as they are sporadic in their approach to the subject.

5. DISCUSSION

The results reveal that environmental literacy is included in the secondary English textbooks in Punjab, but it is embedded in a rather limited number of text and pedagogical units. There is a high proportion of knowledge (80.0 %), and attitudes/values (76.0 %), but fewer skills (56.0 %) and action (40.0 %) environmental coding units. This trend also reinforces the more general issue that the presence of environmental themes does not guarantee an environmental competence that is balanced. According to Hollweg et al. (2011), environmental literacy is a synthesis of three subdimensions: knowledge, dispositions, and competencies, and responsible behaviour; the textbooks here are better concerning the first two dimensions as compared to sustained competency and action.

There appears to be a quite small curricula continuity from Grade IX to Grade X. While Grade IX focuses on appreciation of nature and current local issues such as noise pollution, littering and school waste, Grade X is directed at issues of population pressure, food security, water, energy, biodiversity, monsoon hazards and institutional responsibilities. Knowledge rises from 66.7% of Grade IX coding units to 92.3% in Grade X, skills from 50.0% to 61.5%, and action from 33.3% to 46.2%. There is also a higher proportion of grade X tasks that are level 3 critical-understandings tasks. This sequence is helpful, but it does not take a systematic approach to an environmental-literacy curriculum.

This uneven process also has curriculum–textbook coherence implications. If one assumed that the alignments between curriculum objectives and textbook content are evident, Javed and Karim (2024) demonstrate otherwise. That concern is also found in the results obtained in the present study: while environmental literacy is apparent, its development between grade levels is not systematic enough. Karim and Harwood (2026) also note that even carefully formulated curriculum intentions can change during enactment in the classroom, highlighting the need for further research into the work of environmental literacy in the future to focus on not only what environmental-literacy tasks can look like prescriptively but how these tasks manifest in the classroom.

The affective approach of nature in literature is educationally effective and ecologically restricted. Poems and prose about nature can promote attention to, appreciation for and feelings of connection to, the non-human world, but they rarely relate to ecosystem processes, biodiversity, habitat loss or conservation. This separation is similar to the one by McBride et al. (2013), who demonstrate that environmental literacy is more than just an attitude, it also involves knowledge, skills, and behaviour.

The higher level of anthropocentric framing is in line with previous studies on textbooks in Pakistan. Zahoor and Janjua (2020) identified that in the English textbooks of Pakistan the nature was sometimes portrayed in a human-centred way. In the current research, nature is often appreciated for beauty, health, food, water, energy, safety or economy. An ecolinguistic perspective is relevant to framing in that it can normalise assumptions about the human-nature relationship by means of recurring patterns of representation (Stibbe, 2015).

The findings are also parallel from international research in the field of ELT textbooks. Lee and Nguyen (2024) discovered that ELT books written in Vietnam demonstrated that there is a lack of representation of environmental behaviour compared to knowledge and affect and that the content is fragmented and mostly anthropocentric. Triyono et al. (2023) also found that pedagogical activities can be carried out in a relatively low

level of environmental learning while also maintaining the discourse that is favourable to the environment.

There are however several activities that show the potential of English for environmental civic communication. Language competence is linked to environmental agencies in the requests for separate waste bins, complaints regarding solid-waste collection, planning for noise control in schools, monsoon recommendations, and requests for watershed information. The downside is that most of them are still simulated. The guidance from UNESCO's Greening Curriculum invites climate and sustainability learning that is action focused, holistic, scientifically accurate and relevant to challenges in the real world (UNESCO, 2024).

The tougher Grade X tasks at Level 3 also uphold the critical-reading pedagogy. Qanwal et al. (2017) emphasize metacognitive awareness in L2 reading, whereas Qanwal and Karim (2022) associate critical-thinking pedagogy with critical-reading proficiency. Environmental texts can thus be particularly useful for tasks that demand monitoring of understanding, distinguishing between claims and evidence, comparing rival explanations, and providing justification for solutions. These activities would serve to reinforce ELL and environmental reasoning.

The obvious curricular gap is the issue of climate change. Though the textbooks talk about availability of fresh water, monsoons hazards, food security, agricultural studies and scarcity of resources, this is mentioned only once, briefly, in a Grade IX visual. These topics offer opportunities for age-appropriate climate literacy which are natural. UNESCO (2024) highlights the idea of age-appropriate climate-ready curricula.

Overall, the findings indicate an integrated approach to the development of English textbooks in the future. Environmental topics should not replace language objectives, but can provide real-life context for reading, vocabulary, argumentation, formal correspondence, oral presentation, media literacy, data interpretation and project writing.

6. CONCLUSION AND IMPLICATIONS

6.1 Conclusion

The current study focused on the depiction and pedagogical handling of Environmental Literacy in the Grade IX and Grade X English textbooks prescribed at secondary level in Punjab. The four dimensions of environmental knowledge dimension, environmental attitudes/values dimension, environmental skills dimension and environmental action dimension indicated that the environmental learning is supported by both textbooks, but the contents are composed un-smoothly, scattered and focused on limited units. Environmental literacy does not appear as a consistently developed theme across the two grades.

The Grade IX textbook mainly promotes environmental awareness through literary appreciation, local pollution issues, and civic responsibility. Texts such as Daffodils, Stopping by Woods on a Snowy Evening, and Three Days to See encourage learners to observe and appreciate flowers, trees, woods, birds, streams, and seasonal change. However, these texts generally present nature as a source of beauty, peace, and emotional well-being rather than as an interconnected ecological system. More direct environmental learning appears in Noise in the Environment, which explains the sources, effects, and control of noise pollution. The anti-littering dialogue and writing activities concerning waste bins and solid-waste collection also introduce individual and institutional responsibility.

The Grade X textbook presents a broader and more developed environmental framework. The Rain and Peace combine nature's appreciation with awareness of excessive rainfall, storms, and natural disasters. The monsoon-related tasks and review material require learners to consider preparedness, evacuation, sanitation, drainage, livestock protection, embankments, and the responsibilities of public institutions. The most substantial environmental treatment appears in Population Growth and World Food Supplies, which connects population growth with pressure on agricultural land, freshwater, fossil energy, biodiversity, and food production. It also introduces conservation, sustainable agriculture, ecological limits, and responsibility toward future generations.

There is one degree of progression between the two textbooks. Emphasis in Grade IX is on present and visible issues like littering, noise, cleanliness and enjoyment of nature's beauty. Grade X makes efforts towards wider linkages between Population, Resources, Agriculture, Food Security, Biodiversity, Technology and Environment Management. It also allows for more opportunities in cause-effect analysis, evaluating proposed solutions,

media-based inquiry, group presentations, and formal communication with authorities.

Yet this advancement falls short when considering the issue of environmental literacy. Environmental knowledge is focused on a small number of units and there is little environmental content in many of the units. Knowledge and science of environment and ecology is not visible as much as environmental attitudes and values. Pupils are encouraged to value nature and are aware of environmental issues but there is little opportunity to explore ecosystems, to interpret information about the environment, to compare viewpoints, or to examine environmental issues in local contexts.

The last dimension is environmental action, which is the least developed. The textbooks contain activities that are relevant to the children's environment, such as identifying where the noise comes from in the school, asking for separate waste bins, writing complaints to the waste-managers or local road-maintenance authority, collecting newspaper articles on monsoon rains, suggesting measures for disaster management, etc. These activities are typically, however, simulated, written or discussion based. Rarely will students be expected to take some kind of action for the environment, track how it has worked, evaluate the outcomes, or even be involved in long-term projects at school and/or in their communities.

The predominant view of the environment is human-centred. Nature is appreciated primarily for its beauty, emotional support, food, water, energy, health, safety and economic assistance to human life. Biodiversity and conservation are mentioned in Grade X, but the importance of biodiversity as having intrinsic value of species, habitats and ecosystems is not highlighted in the textbooks. Knowledge about ecology is still weak, thus the ecocentric understanding is also weak.

There are also several environmental issues that are not discussed or are underdeveloped. They range from climate change, greenhouse emissions, air pollution, water pollution, renewables, deforestation, wildlife protection, plastic pollution and restoration ecology to sustainable consumption, food waste and environmental justice. Climate change is underrepresented in particular; with relevance to monsoon variability in Pakistan, it has consequences for flooding, water scarcity, agriculture and food security.

The English textbooks (Grade IX and Grade X) generally offer some and partial provision for environmental literacy. Grade IX may be described as encouraging moderate awareness for the environment with limited ecological depth, Grade X as providing wider knowledge of the environment and stronger critical engagement. Both textbooks fail, however, in establishing a continuity from environmental information and appreciation towards critical understanding and continuing action. Education for environmental literacy has a great potential in English language education which has partly been tapped in the present textbooks.

6.2 Implications and Recommendations

It is necessary to cover both materials and teacher capacity. As suggested by Karim et al., (2021) the content must be transformed into research-informed language learning tasks instead of mere thematic content. There is also a need for teacher professional development; Khan and Karim (2024) illustrate the significance of in-service support with the introduction of new curricular expectations. In the context of environmental literacy, this should involve approaches to critical discussion, project-based learning, local environmental enquiry as well as evaluation of action-oriented language tasks.

Environmental content should be more comprehensive throughout the textbooks and not be limited to a few poems, prose lessons and review. Thematic approaches to environmental themes should be found in the reading passages, vocabulary exercises, comprehension questions, oral communication, and writing assignments regularly throughout the school year to give learners continuous and coherent treatment of environment-related matters.

There should be a clearer sequence of progression from Grade IX to Grade X, with more emphasis on observation, local environmental issues, environmental appreciation and personal responsibility in Grade IX and more emphasis on systems thinking, sustainability, evaluation of policies, institutional responsibility and participation in the community at Grade X. This advancement would allow learning for environment to be cumulative instead of repetitive or singular.

Future editions should enhance environmental knowledge, introducing in each edition age-appropriate content on climate change, air and water pollution, biodiversity, ecosystem functioning, deforestation,

renewable and non-renewable energy, waste reduction, sustainable agriculture, food waste and responsible consumption. These concepts should not only be introduced through pictures, words and/or individual examples, but should be developed enough to be understood.

links between nature-based literary texts and ecological knowledge should be made more explicit. Questions can be set on habitats, seasonal cycles, biodiversity, human impact, conservation and environmental change following a poem about flowers, rain, woods, birds or streams. This will encourage students to shift from emotional appreciation of nature towards informed environmental concerns.

Environmental content should also include the issues which are relevant locally to secondary school students in Punjab. Issues like smog, depleting ground water, pollution of canals and rivers, urban floods and heat waves, burning agricultural residues, plastic pollution, deteriorating soil health and loss of green spaces would make learning more relevant and real.

There is need to have more critical and evaluative tasks in comprehension and writing activities. When discussing the explanation, causes and consequences, proposed solutions, affected groups, institutional responsibility, evidence vs opinion, and recommendation, students should be prompted to make comparisons whenever appropriate. This would promote in-depth critical environmental literacy and lessen reliance on factual recall.

Practical investigations should be carried out in the school and in the community and be included in the textbooks. Students can carry out a school waste audit, map the sources of noise and/or air pollution, monitor water use, survey the use of plastic within the school, monitor local biodiversity, or analyse the school's drainage issues. They can then share their interpretations in a written report, presentation, poster or formal letter or debate.

Where possible, activities should move beyond simulation and should be action oriented. In addition to encouraging students to report their findings to school management, it is important to implement the following: It is important for students to also reflect on these activities and assess if any impact was made on their actions.

There should be an increased balance between individual responsibility and institutional responsibility. Don't make environmental issues of personal hygiene or behaviour. Discussions should be expanded regarding the roles to be played by local governments, environmental protection agencies, industries, school, agricultural department, municipality, disaster-management and community.

The textbooks of the future should also further reflect an ecocentric point of view. Plants, animals, habitats and ecosystems should be represented as being of value not just to humans. Interdependence of species, protection of habitat, animal welfare and innate values of biodiversity should be covered in lessons.

Environmental information and how to read and comprehend information should be integrated into language activities. They are able to read graphs of rainfall or temperature data, maps of areas at risk of flooding, charts about water use, diagrams of food chains or food webs and infographics concerning climate change or biodiversity. Such activities would enhance the appreciation of the environment and English-reading ability.

In teacher guidance, it is important to provide teachers with information regarding teaching and learning about the environment using language-learning goals. Teachers are looking for realistic ideas and approaches to using conversations, investigations, group work, community work, etc. without making English class into "science class!

Environmental literacy should also be reflected in assessment. Analytical paragraphs, evidence-based writing, environment presentations, formal letters, local investigations reports, and reflective environmental action accounts can be used to assess students. Assessment should include Knowledge, Reasoning, Communication, Responsible participation.

Lastly, the authorities of the textbooks should periodically review the environmental information in the textbooks to make it scientifically current, locally relevant and responsive to new environmental conditions in Punjab and Pakistan.

6.3 Limitations and Future Research

This study is based on two prescribed secondary English books and not all materials taught in English in Punjab or Pakistan. It assesses curricular opportunity, not classroom enactment. Even with specific coding rules and intercoder checking, content analysis is an interpretive act. The quantitative results are not the proportion of all the pages in the textbooks, or the proportion of all the activities in them,

but are the 25 environmental coding units identified. Further research is needed to explore other grade levels, different provincial textbook systems, teacher and student use of environmental content, and to assess for real environmental projects that are connected to English instruction.

6.4 Final Statement

There is no need to substitute the language curriculum for environmental science education when environmental literacy is incorporated into the curriculum. Environmental topics can be used for purposeful reading, discussion, writing, presentation, critical thinking and civic discourse. Incorporation of the environment as a theme in English should be done in a more systematic way as it can play a more effective role in the making of informed, reflective and environment-friendly learners at the secondary level in Punjab.

REFERENCES

Cohen, J. (1960). A coefficient of agreement for nominal scales. Educational and Psychological Measurement, 20(1), 37–46. https://doi.org/10.1177/001316446002000104

Hollweg, K. S., Taylor, J. R., Bybee, R. W., Marcinkowski, T. J., McBeth, W. C., & Zoido, P. (2011). Developing a framework for assessing environmental literacy. North American Association for Environmental Education.

Jacobs, G. M., & Goatly, A. (2000). The treatment of ecological issues in ELT coursebooks. ELT Journal, 54(3), 256–264. https://doi.org/10.1093/elt/54.3.256

Javed, H. M. H., & Karim, S. (2024). Alignment between curriculum and textbooks of English language at secondary level: An evaluation of English language curriculum objectives. Migration Letters, 21(S14), 597–608.

Karim, S., & Harwood, N. (2026). Alignment between intended and enacted pedagogies: A study of ELT curriculum innovation implementation in Pakistan. System: An International Journal of Educational Technology and Applied Linguistics, 136.

Karim, S., Saeed, A., & Haq, N. (2021). Second language acquisition research and materials development: Need to bridge the gap between theory and practice. Pakistan Journal of Humanities and Social Sciences, 9(3), 281–291.

Khan, M. R., & Karim, S. (2024). Exploring ESL teachers' perceptions about in-service training to teach Single National Curriculum in Pakistan. Migration Letters, 21(S13), 504–520.

Lee, D. B., & Nguyen, T.-H.-N. (2024). The treatment of environmental literacy in the ELT textbooks in Vietnam. Cogent Education, 11(1), 2425898. https://doi.org/10.1080/2331186X.2024.2425898

McBride, B. B., Brewer, C. A., Berkowitz, A. R., & Borrie, W. T. (2013). Environmental literacy, ecological literacy, ecoliteracy: What do we mean and how did we get here? Ecosphere, 4(5), Article 67. https://doi.org/10.1890/ES13-00075.1

Nkwetisama, C. M. (2011). EFL/ESL and environmental education: Towards an eco-applied linguistic awareness in Cameroon. World Journal of Education, 1(1), 110–118. https://doi.org/10.5430/wje.v1n1p110

Qanwal, S., & Karim, S. (2022). A correlational study of critical thinking pedagogy and critical reading proficiency. Journal in Social Science, 11–33.

Qanwal, S., Karim, S., & Haq, N. (2017). Role of metacognitive awareness of reading strategies in L2 reading comprehension ability. Kashmir Journal of Language Research, 20(1).

Schreier, M. (2012). Qualitative content analysis in practice. SAGE.

Stibbe, A. (2015). Ecolinguistics: Language, ecology and the stories we live by. Routledge.

Triyono, S., Sahayu, W., Margana, & Fath, S. N. (2023). Ecological discourse and environmental education in English textbooks: A multimodal eco-critical discourse analysis. 3L: The Southeast Asian Journal of English Language Studies, 29(3), 213–227. https://doi.org/10.17576/3L-2023-2903-15

UNESCO. (2020). Education for sustainable development: A roadmap. UNESCO.

UNESCO. (2024). Greening curriculum guidance: Teaching and learning for climate action. UNESCO. https://doi.org/10.54675/AOOZ1758

United Nations. (2015). Transforming our world: The 2030 agenda for sustainable development. United Nations.

ISSN: 3079-3319
Volume: 4,
Issue:(02)
Aug 26 - Oct, 2026

Xiong, T. (2014). Shallow environmentalism: A preliminary eco-critical discourse analysis of secondary school English as a foreign language (EFL) texts in China. The Journal of Environmental Education, 45(4), 232–242. https://doi.org/10.1080/00958964.2014.943686

Zahoor, M., & Janjua, F. (2020). Green contents in English language textbooks in Pakistan: An ecolinguistic and ecopedagogical appraisal. British Educational Research Journal, 46(2), 321–338. https://doi.org/10.1002/berj.3579